Most of the data accumulated has been from reactions seen in the glomeruli with IgG antiserum, noting either a linear or a granular staining pattern. The basic assumption is that with a linear staining along the glomerular loops one has a disease process with an antibody directed against the glomerular membranes, whereas a lumpy or granular pattern suggests an immune complex disease with the complexes "caught" in the glomerulus. In Goodpasture's disease, rapid progressive glomerulonephritis, and nephropathy with burns, there may be a linear deposit of IgG; while in systemic lupus erythematosus, carcinomatous nephropathy, malaria, and post-streptococcal nephritis, a granular pattern may be seen. Complement antiserum is useful because sometimes it is the only protein found in the glomerulus and from its pattern, or in conjunction with IgG staining, the disease process can be better defined. Fibrinogen is found in many of the above diseases but is predominate in the renal disease associated with toxemia of pregnancy. In transplantation the linear pattern may herald problems because of an antiglomerular membrane antibody. If pyelonephritis is suspected, fluorescein-tagged antisera against bacterial antigens can be used to detect culture-negative pyelonephritis.

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Pituitary Hormone Assay

The concentrations of all major human anterior pituitary hormones in serum can now be determined specifically and precisely by radioimmunoassay. With few exceptions, anterior pituitary function should be evaluated directly by radioimmunoassay of hormones in serum rather than by bioassay of urinary excretory products, etc. Reagents for radioimmunoassay of luteinizing hormone, follicle stimulating hormone and growth hormone (GH) are available commercially and the methods are being established in many clinical laboratories. Recent studies indicate that human prolactin also exists distinct from GH and radioimmunoassays have already been developed for this hormone. Human prolactin appears to be secreted primarily in late pregnancy and in association with lactation. Development of similar radioimmunoassays for low molecular weight agents related to pituitary function (steroids, prostaglandins, cyclic AMP and hypothalamic releasing factors) are progressing rapidly and should result in quantum jumps in our understanding of hormonal regulation of bodily function.

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Implication of Epstein-Barr Virus in Human Disease

The Epstein-Barr virus (EBV) is a herpes-like virus initially reported by Epstein and Barr in continuous lymphoblastic cell cultures derived from Burkitt lymphomas. The observation of elevated antibody titers in patients with variable diagnoses including infectious mononucleosis, Burkitt's lymphoma, nasopharyngeal carcinoma, Hodgkin's disease and lymphocytic leukemia has raised the possibility that this virus may be the etiologic agent in these diseases. No direct evidence, however, has been presented to substantiate this possibility. Furthermore, serological studies have shown that the virus may be common in the general population, particularly in the low socio-economic groups.

It is postulated that after EBV infection, the virus remains inactive until another factor alters the apparent steady state of the host, and replication and antibody production then occurs. In infectious mononucleosis the EBV antibodies are demonstrated at about the same time as the heterophile antibodies and may persist indefinitely, unlike the heterophile antibody levels which

usually fall quickly. At present the value of EBV serological studies in routine diagnosis has not been clarified.

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Computer-Based Inventory and Information Systems for Blood Banks

The availability of blood and blood products in sufficient quantities is an essential component in the delivery of health care. The regional blood bank is concerned with input of blood (donor recruitment), distribution of blood (inventory control and component preparation) and use or disposition of blood. These functions can be greatly facilitated by the application of a computer-based information system. Systems utilizing either dedicated or time-sharing computers are now available which offer: donor files with automatic call-up to actively control blood input, minimizing shortages without incurring excessive outdating; inventory programs to track the blood in the system using critical parameters such as location, ABO and Rh type, and days remaining before expiration; and a donor-patient link to simplify control of problems such as transfusion hepatitis. Statistical summaries and management reports produced by the computer provide a means to develop strategies which maximize the use of the community blood resources. It is too early to assess the cost-effectiveness of these systems, but experience indicates that the added cost will result in significant improvement in blood bank services.

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Slow Virus Infection of Nervous Tissue

One of the most exciting advances in neuropathology was the demonstration by Gajdusek et al (1967) and Gibbs and Gajdusek (1969) that two subacute progressive "degenerative" diseases of the human nervous system, namely Kuru and Creutzfeldt-Jakob disease, could be transmitted to chimpanzees. After an incubation time of from one to two years in the animals a slowly progressive encephalopathy developed that mimicked the corresponding human disease. The pathologic changes of these diseases are remarkable in that there are no inflammatory reactions. Intense gliosis and vacuolar degeneration of nerve cells are characteristic findings. A similar subacute spongiform encephalopathy, namely scrapie, is known to occur in sheep. The agents inducing these encephalopathic conditions have not yet been identified. The unusual characteristics of the scrapie agent suggest a structure akin to plasma membranes. Electron microscopy supports this theory by revealing abnormal collections of membranes in vacuolated neuronal processes. There is reason to believe that other degenerative diseases of the nervous system may also be caused by slow virus infections.

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Prevention of Viral Hepatitis

In 1970, the national cooperative study of post-transfusion hepatitis reported that 30 ml of gamma globulin following transfusion failed to prevent or modify either short (IH) or long incubation (SH) disease. However, globulin does pre-